Electrical safety requirements for lithium-ion battery powered e-transport devices: Consultation paper

Submission by REV-Bikes Pty Ltd

Initial thoughts:

This is an important pathway to raise the standard for Australian sellers into the Victorian market, as most do not care about battery quality, or the associated risks of low quality batteries.

REV Bikes have been selling e-bike conversion kits for 16 years, and have always been focused on supplying batteries with excellent longevity, reliability and safety. We investigated ways to manage the charge to avoid cell stress, to give consumers longer-lasting batteries. We have never seen the benefit of this effort, as the market prefers to buy the cheapest thing, or something that looks 'reasonable quality', rather than spending more for the best quality.

Some lithium chemistries are safer than others, such as LiFePO4 (which can be pierced and still won't combust), so some distinction should possibly be made between lithium compositions in batteries. Some need less safely precautions than others (eg, LiPo cells are very volatile!)

I believe a Supplier Registration requirement would potentially be appropriate, depending on how that would be applied.

Questions for consultation

1. Do you agree with our proposal to declare e-transport devices and associated lithium-ion batteries as "controlled electrical equipment" under the Act? Why or why not?

I understand the intention, and certainly Batteries should be Controlled and Regulated. But we deal in custom-made e-mobility solutions, and I don't understand how these one-off builds and custom bikes / trikes can meet any regulatory compliance. Are you proposing that the MOTORS also must be Certified? Many of the customised builds are for people with special needs, or in the consumers sustainable pursuit of recycling existing bicycles. Certification of the other parts (motor, controller, wiring harness, displays, controls such as pedelec sensors, etc) seems impractical an unnecessary, given they are not able to contribute to a battery failure / fire, if the battery is properly protected against short circuits.

2. Are there alternative approaches you believe would effectively manage the electrical safety risks associated with lithium-ion battery powered e-transport devices?

I believe the Certification of batteries & chargers is the most important, given the battery and its power supply are the only combustible parts. I am not sure how this can be managed when so many batteries are being imported directly from China or similar. They are not meant to be freighted by air, but they frequently are, which carries more potential for harm during transit too.
I believe it should be necessary to purchase batteries from authorised sellers here in Australia, so that relevant accountability is provided. Supplier Registration requirement would be similar to the framework which was in place to get Import Approvals in the past.
Within our 'Conversion Kits' sector, I would recommend that any custom-built e-bikes are required to be built by recognised e-bike businesses (by professional mechanics), rather than DIY in home garages, which is where so many other things (electrically and mechanically) are able to go wrong.

3. If you are a user or potential user of e-transport devices, would knowing the product is independently safety certified impact your purchasing decisions? Yes, safer is good, but the extra cost associated with the certification will drive up the price. It would be good if the cost of certification could be somewhat subsidised.

4. Do you agree with our draft definition for e-scooters, e-skateboards, and other e-transport devices?

Yes, other than the use of the word 'balances' as highlighted below, because they don't balance, **the rider** has to balance. "Particular requirements for Personal-eTransporters or refers to any other electric micromobility device intended for a single rider, with or without a seat and without pedals, that **balances** and propels the rider.."

5. Do you agree with our draft definition for e-bikes and e-bike conversion kits?

Mostly, but for e-bikes I think its important to define the difference between an ePAC (pedelec) electric bike (road legal), and the 'off-road' (not road-legal) throttle-activated type, called by some e-Moto.

Also, I don't understand the term "propulsion battery", especially as its not been used in other groups. Better to keep the language the same.

6. Do you have any other suggestions for defining e-transport devices, including whether we need to clarify exclusions?

I'm not sure in which class an e-bike built using a Conversion Kit would fall, as an e-bike or a Conversion Kit.

7. If you are a supplier/manufacturer/importer, what standards are your e-transport devices currently complying with?

We import a very small number of e-bikes, none of which comply strictly with the EN/ AS 15194 standards (due to going a little faster, or having an adjustable throttle). When we imported e-bikes prior to 2021, they were all compliant wih EN15194, which was the requirement to get the Import Approval. Things changed a lot in this industry when that requirement was dropped.

Our Conversion Kit batteries & chargers comply with CE certification, and we have recently added a few batteries to our range which carry UL2271 or IEC62133 certifications, to be sold legally in NSW. We found that to have tested OUR (special order) batteries to meet the Certifications was very costly (un-economical for us), so we chose some 'generic' battery packs which have been Certified already. These are of lower quality than our packs, on several levels (cell quality, BMS quality, no blade fuses, lower quality charge socket, thinner power cable wiring and thinner insulation, unquestioned tab welding reliability, and more).

What I mean to say is, the standards do not necessarily create higher quality packs

8. Do you have any comments on the electrical safety shortcomings of AS 15194? How do you think these shortcomings can be best addressed?

AS 15194 is meant more to define e-bikes rather than provide safety guidelines, in my opinion. There is no requirement for any safety features, such as thermal or other fuses, plug types which avoid short circuits, etc.

<u>OFFER INCENTIVES TO RAISE QUALITY.</u> If suppliers were rewarded for longevity of the battery (or penalised for supplying batteries which don't last long), rather than motivated to sell another one sooner for their own financial gain, that would push up quality, and improve the consumer experience, while being better for the environment.

9. What would be the impact of certification to different standards in different jurisdictions of Australia (e.g. different standards in VIC and NSW)?

It would be very difficult to manage having to either find battery packs which meet all different certifications, or to stock different batteries to supply to different states. This process suits large corporations just fine, but disadvantages small business and diversity. It becomes more difficult to keep abreast of best practice when the quality of cells is improving and we want to keep up with the cutting edge technology, yet one change to a pack voids its certification. This will force us to narrow the options available to customers, and increase prices, without any real tangible improvement (in our case, because our batteries are already very high quality)

10. What type of guidance would you need, if any, to clarify how to comply with the technical construction requirements of AS/NZS 3820?

Training, in plain language. Recommendation for testing / certification facilities. Clear overview of requirements, also translated into Chinese, to ensure manufacturers maintain consistency of build quality.

11. What would be the costs and operational impacts to your business of certifying and marking e-transport devices to meet safety standards? Please provide approximate figures or ranges, including any testing, labelling, or administrative costs, and how many product lines you would need to certify.

I estimate this would cost us around 25 labour hours locally in administrative costs ([redacted]), requirement to visit manufacturers regarding clarifying the requirements (estimate [redacted]) and then the costs of certification (I've been quoted about [redacted] per model), and labelling (minor). We currently offer around 25 different battery models. This would obviously need to be consolidated. Overall estimate of costs would be [redacted] which would cripple our small business.

12. What factors should we consider when assessing the timing of new electrical safety requirements for e-transport devices?

There is the cost of needing to clear stock which is not certified, if any remains at the time of implementation. The timeframes for certification. The constant flow of new unscrupulous sellers entering the market weekly. The lack of ability to control the direct importation of uncertified batteries (online sellers via AliExpress, etc), and how customs can possibly manage that.

13. If you are a supplier/manufacturer/importer, how much time do you estimate is needed to achieve compliance with new certification and marking requirements for e-transport devices and associated batteries? Please provide as much information and evidence as possible.

I believe 12 months would be sufficient to source some compliant batteries, but we might need longer to clear older models. I feel 18 months feels about right.\

In regards to certification of Conversion Kits (ie, not the batteries but the balance of the components), there are so many variables, and no information has been supplied about how they would be tested / certified, so this may require more time, say 24 months. It should be important to meet INSTALLATION standards too (around safety of wiring paths, power connections, cable insulation thickness requirements, etc), which may require training of e-bike mechanics.

Thank you for your consideration.

[redacted] **Director of REV-Bikes)**

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